

Spectrum Of Intestinal Obstruction

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Abstract:

Objectives: To identify the main etiology of mechanical intestinal obstruction at Ibn Sina Teaching Central Hospital (ITCH) in Al-Mukalla city, Hadramout, Yemen and to clarify the symptomatology in relation to age group and gender.

Methods: A descriptive cross-sectional study was conducted among 148 patients admitted to the Surgical Department of (ITCH). Clinical, radiological features and causes of mechanical intestinal obstruction which was proved by intra-operative findings have been analyzed.

Results: The number of males in this study were 84 (56.8%) while females were 64 (43.2%). The median age of recruited patients was 37 years with a range of 2-85 years. Fifty four percent of the patients were younger than 40

years and around 27% of the patients were 60 years or older . The majority of the patients were complaining of abdominal pain 91.9%, and vomiting 70.3%. Regarding the causes of intestinal obstruction, 43.2% of the patients had obstruction due to external hernia, 21.6% due to tumors , while 8.1% of the patients had intestinal obstruction due to intussusceptions.

Conclusions: Obstructed external hernia was the main cause of mechanical intestinal obstruction in our community. Inguinal hernia exceeds paraumbilical hernia in adult age group, while volvulus was more common in children.

Keywords: mechanical intestinal obstruction; Hadramout/Yemen.

المخلص :

مريضاً (٤٣,٢ ٪). كان العمر الوسيط للمرضى المعينين ٣٧ سنة. ٥٤ ٪ من المرضى تقل أعمارهم عن ٤٠ عاماً، وكان حوالي ٢٧ ٪ من المرضى ٦٠ عاماً فما فوق. غالبية المرضى كانوا يشكون من آلام في البطن (٩١,٩ ٪)، القيء (٧٠,٣ ٪). وفيما يتعلق بأسباب الانسداد المعوي كان (٤٣,٢ ٪) من المرضى بسبب فتق خارجي، الأورام (٢١,٦ ٪)، في حين كان الانفلات المعوي (٨,١ ٪).

الاستنتاجات: انسداد الفتق الخارجي هو السبب الرئيس للانسداد المعوي الميكانيكي في منطقتنا، والفتق الإربي يتجاوز الفتق الصري بين الكبار، في حين أن المتلوية أكثر شيوعاً بين الأطفال.

تهدف هذه الدراسة إلى وصف المسببات الرئيسة للانسداد المعوي الميكانيكي في مستشفى ابن سينا المركزي التعليمي في مدينة المكلا حضرموت اليمن، والتعرف على الأعراض السريرية وعلاقتها بالفئة العمرية والجنس.

المريض وطريقة العرض: شملت هذه الدراسة ١٤٨ مريضاً أدخلوا إلى قسم الجراحة العامة بالمستشفى، وقد تم تحليل كل من: الأعراض السريرية، الميزات الإشعاعية، وأسباب الانسداد المعوي الميكانيكي التي أثبتت من خلال التدخل الجراحي.

النتائج: عدد الذكور في هذه الدراسة ٨٤ مريضاً (٥٦,٨ ٪)، في حين كان الإناث ٦٤

Introduction :

Acute intestinal obstruction is an international problem that consumes much of medical services resources¹ . The etiology of mechanical intestinal obstruction (MIO) varies from country to country, where colonic cancer is more common in the developed countries, while in Africa & India, volvulus of the large bowel is the primary cause of obstruction². It is changing with the increasing awareness among the patients and improved health services in most of the developing world ³. The spectrum of the causes of intestinal obstruction varies demographically⁴. The aim of this study is to find out the frequency of the conditions leading to bowel obstruction in our community, and the related symptomatology to age and gender.

Patients & Methods:

This is a descriptive cross-sectional study conducted at (ITCH) in Al-Mukalla city in Hadramout, Yemen. The study included all patients seen with clinical and radiological features of mechanical intestinal obstruction, Those proved intra-operatively as patients with mechanical intestinal obstruction were analyzed.

Out of 349 patients, diagnosed as intestinal obstruction, they are admitted to the surgical department in (ITCH) during the 3 years period, 148 patients, diagnosed as having mechanical intestinal obstruction, were recruited in the study, from 1st January 2010 to 31st December 2012. Age group, gender, symptomatology and etiology according to operative findings were analysed. Patients with clinical diagnosis of intestinal obstruction, treated conservatively, sub acute intestinal obstruction, and patients who refused operation, especially in the pediatric age group, were excluded from the study.

Chi2 test was used to compare the patients having mechanical intestinal obstruction according to their age group, gender, etiology and clinical pictures. Significance was achieved when p. value was less than 0.05. An analysis was performed using SPSS version 11.5.

Results :

Out of the 148 patients admitted to the surgical department, 84 (56.8%) were males and 64 (43.2%) were females. The ratio of male to female is 1.3:1. The median age of recruited patients was 37 years with a range of 2-85 years. Fifty four percent of the patients were younger than 40 years and around 27% of patients were 60 years or older (table 1).

Table (1) shows the distribution of age group regarding gender. There is significant difference of age between males and females in the incidence of intestinal obstruction. Around 35.1% of the patients who suffered from intestinal obstruction were less than 20 years old, and majority were males who formed (76.9%). On the other hand, 27.1% of the patients were in the age group 60 years or older, and the majority of them were female (70%).

Table (1) Distribution of age group and their relation with gender.

Variables		SEX		Total 148 (100%)	Chi ² P. value
		Male (n ₁ =84)	Female (n ₂ =64)		
Age group	<20	40 (76.9%)	12 (23.1%)	52 (35.1%)	0.000
	20-39	24 (85.7%)	4 (14.3%)	28 (18.9%)	
	40-59	8 (28.6%)	20 (71.4%)	28 (18.9%)	
	=>60	12 (30.0%)	28 (70.0%)	40 (27.1%)	
	Total	84 (56.8%)	64 (43.2%)	148 (100%)	

Regarding the causes of intestinal obstruction 43.2% of the patients were due to external hernia, adhesion formed 13.5%, they are more common among males. Tumor (21.6%), volvulus (13.5%) were more prevalent among females with 80% and 75% respectively. while the intussusceptions was the cause of obstruction in only 8.1% of the patients (Table 2).

Table (2): Frequency and percentage of patients with intestinal obstruction regarding gender

Variables		SEX		Total 148	Chi ² P. value
		Male (n ₁ =84)	Females (n ₂ 64)		
Etiology	External hernia	48 (75.0%)	16 (25.0%)	64 (43.2%)	0.000
	Volvulus	4 (20.0%)	16 (80.0%)	20 (13.5%)	
	Adhesion	16 (80.0%)	4(20.0%)	20 (13.5%)	
	Intussusceptions	8 (66.7%)	4 (33.3%)	12 (8.1%)	
	Tumor	8 (25.0%)	24 (75.0%)	32 (21.6%)	

As shown in figure (1) inguinal hernia is more prevailing than umbilical or paraumbilical hernia with significant difference as a cause of intestinal obstruction {47(31.8%) vs 17(11.5)}, while recto-sigmoid tumor was more common as a cause of intestinal obstruction than the other parts of colon.

Figure (1):- distribution of external hernia and types of tumors according to the gender

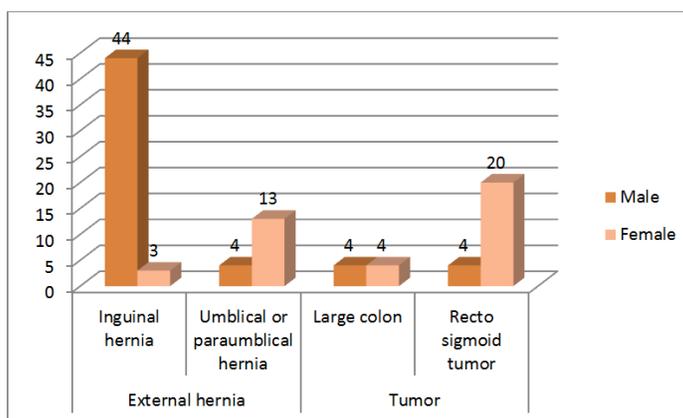


Table (3) shows that the majority of the patients were complaining of abdominal pain (91.9%), and vomiting (70.3%), while the lowest frequency of symptoms was altered bowel habit.

The differences between males and females in the presence of abdominal mass and swelling were significant (p. value 0.009 and 0.014 respectively). The percentage of females with abdominal mass was larger than males (70% vs. 30%). On the other hand, abdominal swelling was more common in males (75%) than in females (25%).

Table (3): Distribution of clinical signs and symptoms in intestinal obstruction regarding gender.

Variables	SEX		Total	Chi ² P. value
	Male (n1=84)	Female (n1=64)		
Clinical features				
Abdominal pain	76 (55.9%)	60 (44.1%)	136 (91.9%)	0.342
Distension	36 (52.9%)	32 (47.1%)	68 (45.9%)	0.243
Constipation	36 (52.9%)	32 (47.1%)	68 (45.9%)	0.243
Vomiting	60 (57.7%)	44 (42.3%)	104 (70.3%)	0.431
Abdominal mass	6 (30.0%)	14 (70.0%)	20 (13.5%)	0.009
Abdominal swelling	24 (75.0%)	8 (25.0%)	32 (21.6%)	0.014
Altered bowel habit	6 (75.0%)	2(25.0%)	8 (2.7%)	0.245
Past history of surgery	12 (60%)	8 (40%)	20 (13.5%)	0.475

In table (4) Chi square test was used to estimate the association between adults and children regarding gender and clinical features and the etiology of mechanical intestinal obstruction. The results revealed that there is no significant difference between adults and children regarding clinical features as abdominal pain, and past history of surgery except abdominal swelling was more among adults with intestinal obstruction (87.5%) than children(12.5%). It

was found that intestinal obstruction in children was more prevalent among males 32 (38.1%) than females 8 (12.5%).

Table (4) shows also that there were significant differences in the distribution of the etiology of intestinal obstruction between adults and children. The percentage of the adult patients recruited in this study with intestinal obstruction due to hernia was 75%. On the other hand, the percentage of volvulus, as a cause of obstruction, was more common among children (95.2%) than adults (4.8%).

Table (4): Comparison between adults and children patients with intestinal obstruction Regarding gender, clinical picture and cause of intestinal obstruction.

Variables		Age group		Total 148	Chi ² P. value
		Adults (n ₂ 108)	Children (n ₁ =40)		
Gender	Males	52 (61.9%)	32 (38.1%)	84 (56.8%)	0.000
	Females	56 (87.5%)	8 (12.5%)	64 (43.2%)	
Clinical picture:					
Pain		100 (73.5%)	36 (26.5%)	136 (91.9%)	0.414
Distension		48 (70.6%)	20 (29.4%)	68 (45.9%)	0.338
Constipation		52 (76.5%)	16 (23.5%)	68 (45.9%)	0.243
Vomiting		76 (73.1%)	28 (26.9%)	104 (70.3%)	0.558
Mass in abdomen		14 (70.0%)	6 (30.0%)	20 (13.5%)	0.467
Swelling		28 (87.5%)	4 (12.5%)	32 (21.6%)	0.027
Change Bowel habit		6 (75.0%)	2 (25.0%)	8 (5.4%)	0.628
Past history		16 (80.0%)	4 (20.0%)	20 (13.5%)	0.321
Etiology:					
External hernia		48 (75.0%)	16 (25.0%)	64 (43.2%)	0.000
Adhesion		12 (60.0%)	8 (40.0%)	20 (13.5%)	
Tumor		26 (81.3%)	6 (18.8%)	32 (21.6%)	
Intussusceptions		2 (16.7%)	10 (83.3%)	12 (8.1%)	
Volvulus		1 (4.8%)	20 (95.2%)	20 (13.5%)	

Discussion :

It is clear that no age group or gender is protected from intestinal obstruction. However the frequency differs. The younger's were more affected than the elders, and the males were more than the females, with a male to female ratio of 1.3:1. This male preponderance has also been observed in other studies^{1,3-6}. Mechanical intestinal obstruction (MIO) affected the younger age group more than the elders. 54% of the patients were younger than 40 years. Other studies had shown different etiologies other than strangulated hernia, as the main cause of (MIO), such as tuberculosis⁷ and sigmoid volvulus². Also showed high percentage in younger patients.

The clinical features of (MIO) includes abdominal pain, vomiting, distention and constipation; The relative magnitude of each of these is affected by the type and the site of the obstruction⁸. Although the symptomatology differs in both adults and children¹. Abdominal pain is an outstanding feature in both groups . Other symptoms are variable. In the adult age group, the vomiting (73.1%) was followed by constipation and distention . The frequency of the clinical picture was noticed by Baloch⁸ with the same arrangement but with different percentages. In children, a similar picture of symptomatology as in the adult, was seen but the distension (29.4%) being more common than constipation (23.5%).

Abdominal swelling was more common in males while abdominal mass was more common in females (P. value 0.014 and 0.009 respectively). This was because external hernia was more prevalent among the males as a cause of mechanical intestinal obstruction while for the majority of the female it was due to tumor.

Hernias are historically the most common cause of bowel obstruction and continue to be the primary cause in some

developing countries. Yet, many are asymptomatic and often remain undiagnosed⁹. It is generally accepted that many of these hernias may be present at birth or as unnoticed small groin swelling. Though a broad differential diagnosis exists for groin swellings including lymphadenopathy, hematoma, malignancy, testicular torsion etc¹⁰. In rural Sierra Leone, McConkey¹¹ identified the barriers to elective repair of external hernia. These barriers were the expenses of surgery and the distance of the hospital. Our set up poverty and ignorance to treat such asymptomatic small swelling constitute the barriers to elective repair of external hernias.

The diagnosis of (MIO) is straight forward with typical clinical features and aided by imaging studies, but the etiology of the obstruction sometimes is intricate to establish pre-operatively¹². In this study the etiology of (MIO) was distributed as follows, external hernia (43.2%), tumor (21.6%), adhesion and volvulus (13.5%), intussusceptions (8.1%). Table (5) shows the etiology of (MIO) in different regions of the world in comparison with this study. As shown, from this table, the main cause of mechanical intestinal obstruction in Hadramout-Yemen was hernia. Similar results were found in Chile¹⁴ and Nigeria¹³ while the second cause of MIO in our study was tumors. Similar result were also found in Turkey¹⁵. The third cause of MIO in our study was adhesions and volvulus which was in agreement with the results of similar study done in Nigeria¹ and Turkey¹⁵.

Table 5: Comparison between different international studies according to etiology of MIO.

Author	Year published	Location	Total case	Most common etiology	Second most Common etiology	Third most common etiology
Present study	2013	Hadramout Yemen	164	Hernia	tumor	Adhesions & volvulus
Baloch N A ⁸	2011	Quetta Pakistan	252	Tuberculosis	Adhesion	Hernia
Hassan Fehmi ¹⁵	2010	Istanbul Turkey	134	Adhesion	Tumor	Volvulus
Beltran M A ¹⁴	2007	Ovalle Chile	277	Hernia	Adhesion	Tumor
Foster ¹⁷	2006	California USA	32,583	adhesion	hernia	tumor
Ihedioha ¹⁸	2006	Glasgow UK	161	adhesion	hernia	tumor
Lawal OO ⁴	2005	Ile-Ife Nigeria	99	adhesion	Volvulus	Hernia
D.O. Irabor ¹³	2002	Ibadan Nigeria	84	Hernia	Adhesion	Tumor
A.N. Osuigwe ¹	2002	Nnewi Nigeria	76	Hernia	intussusceptions	Adhesion
Miller ¹⁶	2000	Montreal Canada	410	adhesion	hernia	tumor

Conclusions :

Obstructed external hernia was the main cause of mechanical intestinal obstruction in our community. Inguinal hernia exceeds paraumbilical hernia in adult age group, while volvulus was more common in children.

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